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**United States Patent** [19]

Evanicky et al.

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[54] **FLAT PANEL MONITOR COMBINING  
DIRECT VIEW WITH OVERHEAD  
PROJECTION CAPABILITY**

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349/6; 349/5

[58] **Field of Search** ..... 345/7, 126, 102,  
345/1, 87; 349/5-8, 11, 61

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[57] **ABSTRACT**

A back-lit flat panel display subsystem for direct viewing as a monitor and having overhead projection capability. The display subsystem contains a removable door assembly which provides for back-lighting when configured for direct viewing. When the door assembly is removed, the active matrix LCD is semi-transparent and can be placed over (viewing surface down) the imaging screen of an overhead projector such that the LCD color image can be thus projected. The lamps that provide the back-lighting remain within the display subsystem when the door is removed so as to not disturb the power supply lines to the lamps and a unique optical junction is provided between the lamps and a light pipe within the door. The display subsystem contains a sensor detecting door presence and simultaneously shuts off the lamps and reverses the display image (to right to left) upon door removal and turns on the lamps upon door insertion and displays the image from left to right. Within the display, a conductive (grounded) anti-reflective coating is used on the flat panel display to reduce electronic emissions. The system is also portable and can operate as a stand alone peripheral or integrated within a computer system board.

**27 Claims, 19 Drawing Sheets**